

Paniolo Marketing

Ag Risk 5



Risk Sources and Controls Available
for Managing Risk on Farms and
Ranches in Hawaii



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1

What is RISK?

- **RISK:** The probability of an event occurring that can negatively impact your:
 - *Current profit level*
 - *Financial situation (equity position)*
 - *Satisfaction and well-being*

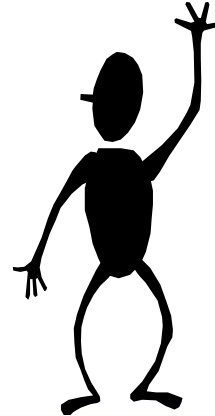


2

Origin of Word RISK

• *RISICARE*

–*Italian word*
–“*TO DARE*”



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3

Risk Tradeoffs

Profits are
the returns for
taking risks



- **Upside:** Greater risk taking usually leads to greater wealth over time
- **Downside:** Losses from risk taking can potentially be devastating
- Managing risks are a matter of evaluating tradeoffs.
- How much risk and how much stress are you willing to endure to potentially achieve higher returns?

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Sources of Risk



- **Business Risks**
 - *Business risks are those risks that occur independently of the way a firm (or farm) is financed. Even with 100% equity (no debt obligations) these risks still occur.*
- **Sources of Business Risk**
 - *Market risk*
 - *Production risk*
 - *Institutional risk*
 - *Social risk*
 - *Legal risk*
 - *Human risk*



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Marketing and Price Risk



**Prices of inputs or outputs change after
you commit to a plan of action.**

What are Your Sources?

- Total national production
- Government programs
- Demand (including quality issues)
- Seasonal effects



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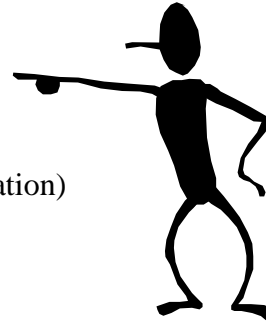
6

Marketing and Price Risk



What are Your Management Controls?

- Forward pricing or contracting
- Diversified market timing
- Diversified production
- Selecting low price risk enterprises
- Obtaining market outlook reports (information)
- Negotiated lease agreements
- Crop Insurance



Production Risk



Uncontrollable events such as weather, pests or disease make yields or inputs unpredictable.

What are Your Sources?

- Weather
- Pests
- Disease
- Genetic variations
- Timing of operations



Production Risk



What are Your Management Controls?

- Selecting low production risk enterprises
- Using low-risk production practices
- Diversification
- Maintaining flexibility and extra capacity
- Utilizing land over a wide spread area
- Crop insurance



9

Current Federal Insurance Options

| Insurance Plans Available in Hawaii | | | |
|-------------------------------------|---------------|-------------|-----------------|
| Insurance Group | Insured Acres | Total Acres | Percent Insured |
| Tropical Fruit - Banana | 500 | 1,400 | 36% |
| Tropical Fruit - Coffee | 3,061 | 6,500 | 47% |
| Macadamia Nuts | 13,000 | 17,000 | 76% |
| Tropical Fruit - Papaya | 48 | 2,100 | 2% |

| Dollar Liability Program | | Total Dollar Liability |
|-------------------------------|--|------------------------|
| Adjusted Gross Revenue - L112 | | \$70,601 |
| Macadamia Trees | | \$41,200,300 |
| Shoyu | | \$10,210,100 |
| Tropical Fruit - Banana | | \$50,300 |
| Tropical Fruit - Coffee | | \$13,533,000 |
| Tropical Fruit - Papaya | | \$101,400 |

| Crop Pilot Programs | | |
|-------------------------|---------------------|--|
| Program | County Availability | |
| Tropical Fruits & Trees | All Counties | |
| Banana | | |
| Coffee | | |
| Papaya | | |

| 2011 Hawaii Crop Insurance Profile | |
|---|--|
| Davis Regional Office | Contact: Jeff Vase, Director Address: 430 O Street, # 4107 Oahu, CA 95016 Phone: (530) 792-0519 Fax: (530) 792-0503 E-Mail: jeff.vase@rma.usda.gov |
| Western Regional Compliance Office | Contact: Susan Chap, Director Address: 430 O Street, # 4107 Oahu, CA 95016 Phone: (530) 792-0500 Fax: (530) 792-0888 E-Mail: susan.chap@rma.usda.gov |

<http://www.rma.usda.gov/pubs/2012/stateprofiles/hawaii11.pdf>

| Hawaii Fifteen Year Crop Insurance History | | | | | | |
|--|--------------------------|-------------------|-------------|---------------|-----------|------------|
| Year | Policies Earning Premium | Net Acres Insured | Liability | Gross Premium | Losses | Loss Ratio |
| 1987 | 88 | 25,720 | 73,633,862 | 853,234 | 12,806 | 0.02 |
| 1988 | 12 | 13,819 | 73,476,625 | 829,637 | 0 | 0.00 |
| 1989 | 125 | 28,347 | 107,258,379 | 1,086,051 | 180,358 | 0.15 |
| 1990 | 120 | 28,624 | 112,679,845 | 1,216,437 | 609,139 | 0.50 |
| 1991 | 130 | 29,145 | 107,154,408 | 1,146,290 | 1,523,019 | 1.33 |
| 1992 | 124 | 25,683 | 107,866,008 | 1,281,718 | 727,632 | 0.57 |
| 1993 | 129 | 26,121 | 99,683,232 | 1,179,889 | 1,116,634 | 0.95 |
| 1994 | 130 | 25,994 | 97,579,476 | 1,169,224 | 614,943 | 0.53 |
| 1995 | 139 | 26,514 | 77,908,808 | 913,200 | 387,341 | 0.42 |
| 1996 | 128 | 26,622 | 89,402,884 | 1,079,769 | 170,235 | 0.16 |
| 1997 | 173 | 30,017 | 105,371,303 | 1,634,460 | 29,209 | 0.02 |
| 1998 | 156 | 29,478 | 120,966,393 | 1,853,230 | 1,778,289 | 0.91 |
| 1999 | 128 | 28,194 | 98,403,307 | 1,458,281 | 674,556 | 0.46 |
| 2000 | 130 | 28,159 | 110,775,658 | 1,580,308 | 984,974 | 0.62 |
| 2001 | 161 | 28,696 | 99,014,000 | 1,462,442 | 2,206,747 | 1.72 |

* 2011 numbers are incomplete



10

Livestock Insurance Options

- **NAP** Noninsured Crop Disaster Assistance Program - Farm Service Agency
- **AGR-Lite** (started November 2nd, 2006)

Federal Crop Insurance Corporation
Crop Year Statistics for 2012
As of: 3/19/2012
Nationwide Summary - By State/Crop

| Crop | Ins Plan | Pol Sold | Pol Earn Prem | Pol Indem | Units Earn Prem | Units Indem | Net Acres | Liabilities | Total Premium | Subsidy | Cost Share | State Prem Sbdy Dcmt | Indemnity Loss Ratio |
|-----------------------------|----------|----------|---------------|-----------|-----------------|-------------|-----------|-------------|---------------|---------|------------|----------------------|----------------------|
| HAWAII | | | | | | | | | | | | | |
| ADJUSTED GROSS REVENUE-LITE | AGRLT | 2 | 1 | 0 | 1 | 0 | 0 | 6,902 | 628 | 345 | 0 | 0 | 0.00 |
| BANANA | APH | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 |
| BANANA TREE | TDO | 1 | 1 | 0 | 1 | 0 | 0 | 624,889 | 38,120 | 38,120 | 0 | 0 | 0.00 |
| COFFEE | APH | 69 | 9 | 0 | 9 | 0 | 2,951 | 2,978,376 | 147,075 | 94,005 | 0 | 0 | 0.00 |
| COFFEE TREE | TDO | 36 | 14 | 0 | 14 | 0 | 0 | 2,076,967 | 10,511 | 9,216 | 0 | 0 | 0.00 |
| MACADAMIA NUTS | APH | 20 | 17 | 0 | 104 | 0 | 12,508 | 21,556,210 | 649,494 | 360,151 | 0 | 0 | 0.00 |
| MACADAMIA TREES | DOL | 21 | 9 | 0 | 13 | 0 | 1,706 | 6,449,172 | 82,227 | 53,195 | 0 | 0 | 0.00 |
| NURSERY (FG&C) | DOL | 26 | 22 | 0 | 47 | 0 | 0 | 17,975,950 | 173,710 | 152,329 | 0 | 0 | 0.00 |
| PAPAYA | APH | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 |
| PAPAYA TREE | TDO | 8 | 2 | 0 | 2 | 0 | 0 | 68,375 | 623 | 605 | 0 | 0 | 0.00 |
| HAWAII Total | | 197 | 75 | 0 | 191 | 0 | 17,255 | 51,736,843 | 1,102,388 | 707,967 | 0 | 0 | 0.00 |
| Grand Total | | 197 | 75 | 0 | 191 | 0 | 17,255 | 51,736,843 | 1,102,388 | 707,967 | 0 | 0 | 0.00 |

Institutional Risk

Government or other institutional rules, regulations and policies effect profitability through costs or returns.

What are Your Sources?

- Changes in social attitudes
- Changing regulations about land use and environmental quality
- The possibility of lawsuits for accidents or misuse of chemicals



Institutional Risk



What are Your Management Controls?

- Maintaining a liability insurance program
- Keeping informed of new regulations and interpretations of the law



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13

Human Risk



The character, health or behavior of the people involved in your operation introduces risk.

What are Your Sources?

- Health issues
- Divorce
- The possibility of losing a key employee
- Moral or the mental state of the work force



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14

Human Risk



What are Your Management Controls?

- A backup management plan
- A plan to deal with the possible loss of a key employee
- Maintaining a health and life insurance program
- Establishing and maintaining an estate plan
- A good employee benefit package



Sources of Risk in Agriculture – *Ag Risk 5*

1. Marketing and Price Risk
2. Production Risk
3. Institutional Risk
4. Human Risk
5. Financial Risk



Financial Risk



Financial risk is the extra risk that is attached to being leveraged. It's the added variability that results from financial obligations associated with debt financing.

What are Your Sources?

- Possibility of losing a lease
- Production, prices, or casualty losses
- Instable financial partners
- Anything that would negatively affect cash flow and the ability to meet debt obligations

Financial Risk



What are Your Management Controls?

- Maintaining a financial cushion
- Practicing solid land leasing strategies
- Incorporating all or part of your operation
- Maintaining up-to-date financial information



Strategies for Managing Risk

- 1. Avoid it**
- 2. Reduce it**
 - a) Reduce the probability it will happen*
 - b) Reduce the impact if it does happen*
- 3. Transfer it outside the business**
 - a) Insurance*
 - b) Contracting*
- 4. Build your internal capacity to bear**
 - a) Increase reserves*
 - b) Maintain flexibility*
- 5. Accept it**



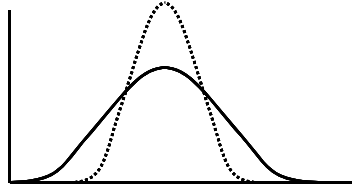
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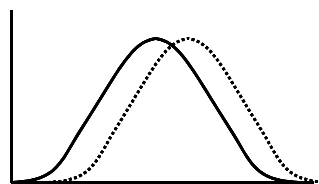
19

Strategy Impacts

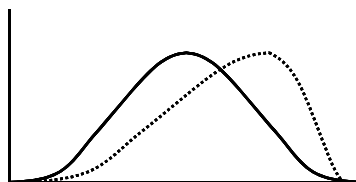
Panel 1: Same Mean, Less Dispersion



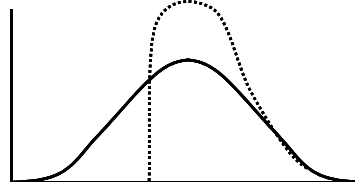
Panel 2: Same Dispersion, Higher Mean



Panel 3: Skewing the distribution



Panel 4: Truncating the Distribution



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20

Personal Perspectives on Risk

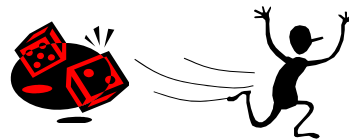
- Generational differences
- Gender differences
- Life stage/family differences
- Life experiences

These are dynamic and change over time.



Types of Risk Preference

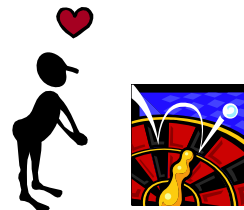
Risk Averse



Risk Neutral



Risk Loving



Risk Preference

Management situations with multiple decision makers are likely to have multiple risk preferences represented . . .

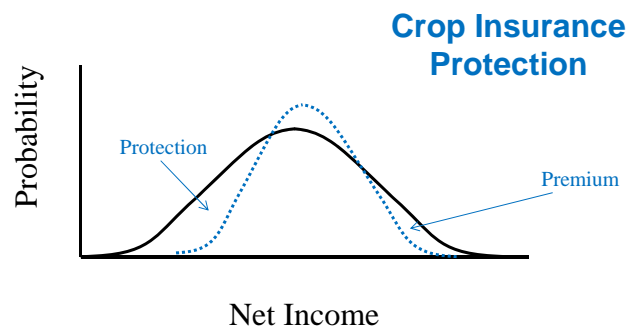


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23

How much risk is right for you?

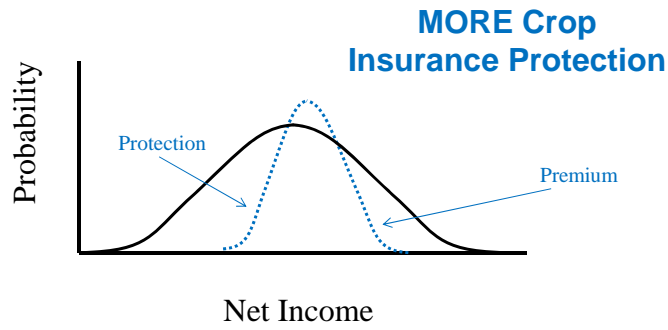


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24

How much risk is right for you?



Applied Risk Management in Agriculture

Dana L. Hoag, editor

James C. Asough H. PhD Catherine Koske
Eliud Fathelimum Jay Farans
Dennis Griffith James Fritchett
John P. Hewlett Aaron Sprague

CRC Press

Monitor & Adjust

STRATEGIC RISK MANAGEMENT

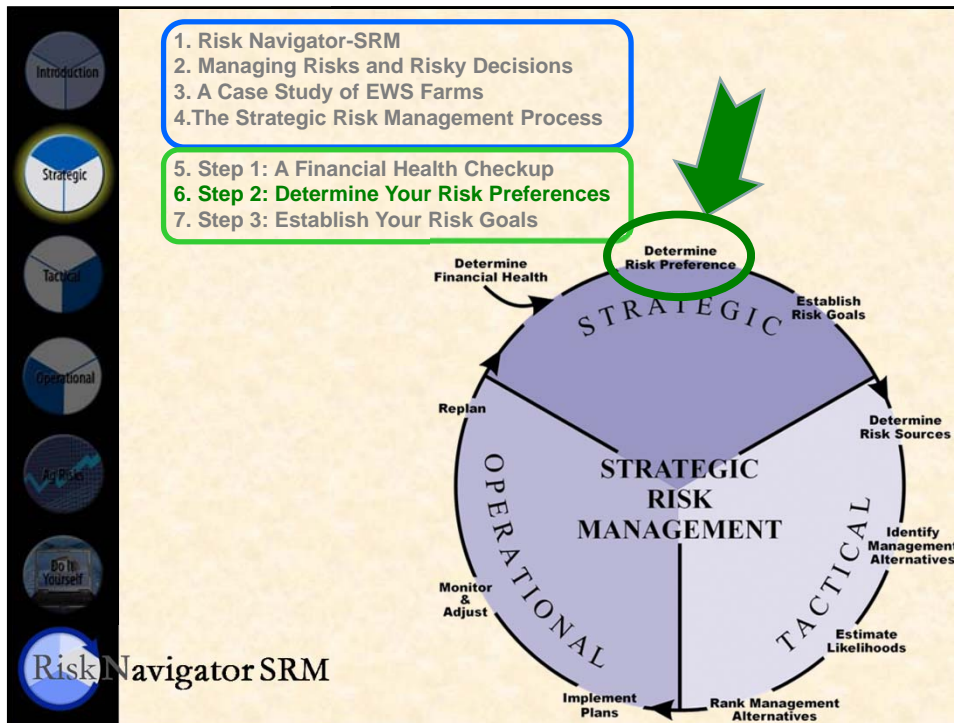
STRATEGIC: Determine Financial Health, Determine Risk Preference, Establish Risk Goals

OPERATIONAL: Replan, Implement Plans

TACTICAL: Determine Risk Sources, Identify Management Alternatives, Estimate Likelihoods, Rank Management Alternatives

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Risk Averse

- Prefers investment with lower, but certain, expected payoff
- Compare to an investment with higher, but uncertain, payoff

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Risk Neutral

- Only cares about the expected payoff of an investment and not the risk that must be taken to achieve the investment goal
- Neither actively takes risks nor pays to avoid them
- Example: Self-insures against loss



Risk Navigator SRM



Risk Loving

Actively engages in risky investments



Risk Navigator SRM



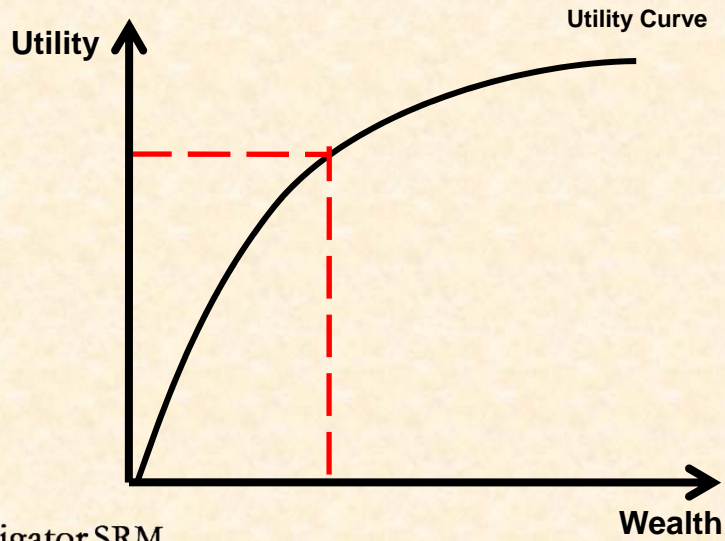
Utility (U)

- Scale of satisfaction
- Based on economic theory
- Mathematically complex formulas that show:
 - Risk tolerance depends upon wealth
 - Satisfaction derived from wealth
 - Rate of satisfaction derived from wealth changes as wealth changes
 - Utility derived from wealth $U(W)$

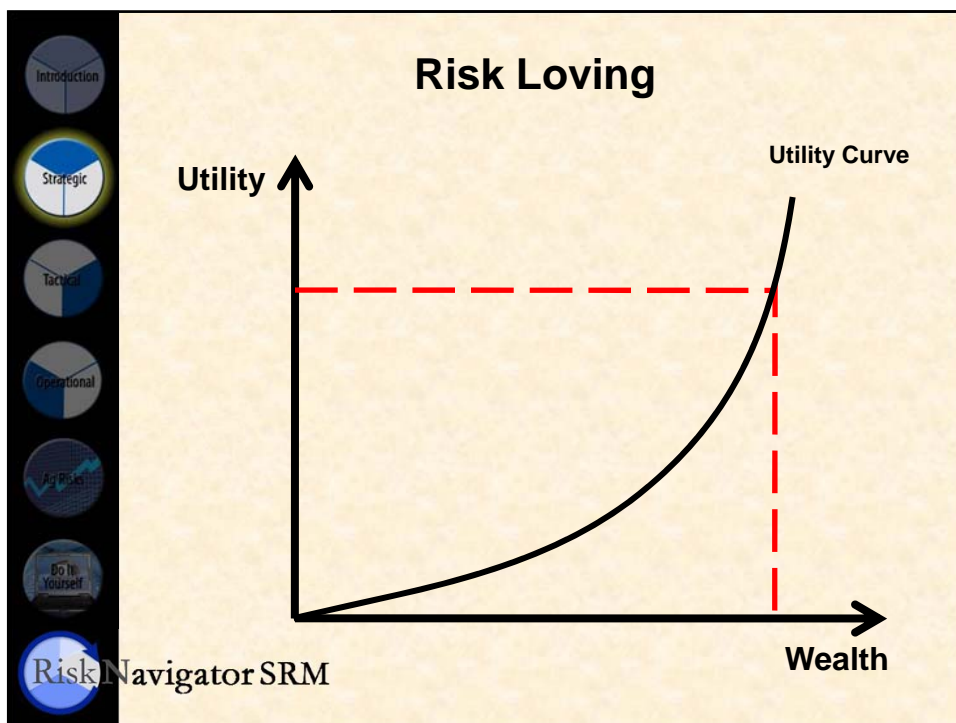
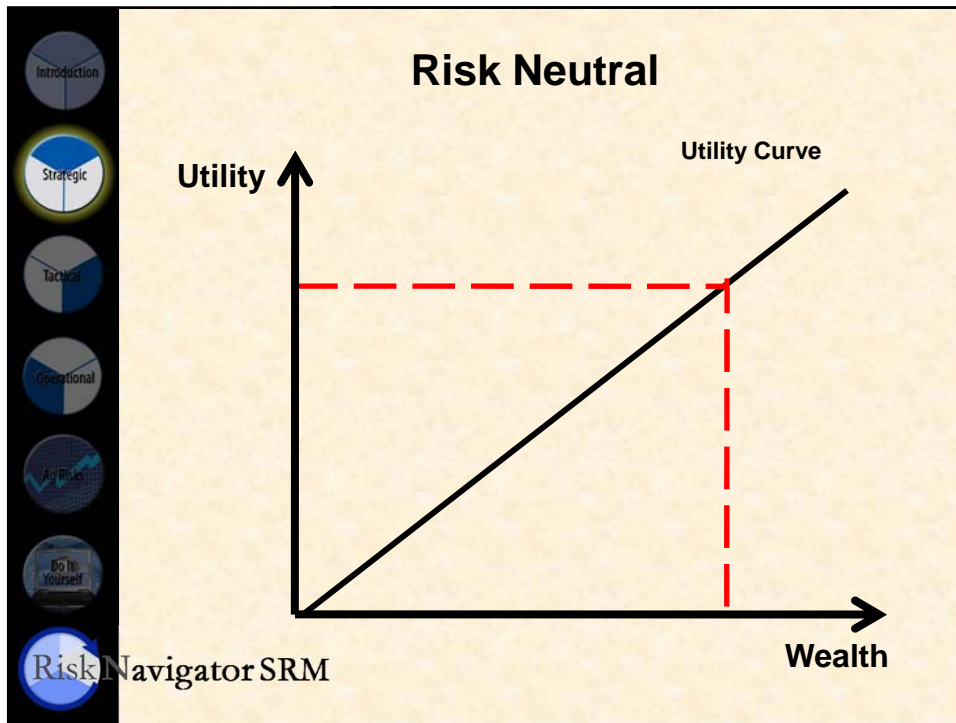
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Risk Averse



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Introduction

Strategic


Tactical

Operational

Risk

Do It Yourself

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Finding Your Ability and Preference to Tolerate Risk

Investment Risk Tolerance Quiz

1. In general, how would you describe your risk level?

- A total beginner
- Willing to take other people's money and invest it
- Confident
- A solid risk taker

2. You are on a TV game show and the chance of winning is 50%. Which would you prefer?

- \$1,000 in cash
- A 50% chance of winning \$2,000
- A 50% chance of winning \$10,000
- A 50% chance of winning \$100,000

3. You have just finished working for a "Famous Old Mine" operation. There is a 50% chance you will win \$100,000 and a 50% chance you will win \$100,000,000. Which would you prefer?

- Cash the \$100,000
- Take a 50% chance of winning \$100,000
- Take a 50% chance of winning \$100,000,000
- Take a 50% chance of winning \$100,000,000

4. You are on a TV game show and the chance of winning is 50%. Which would you prefer?

- \$1,000 in cash
- A 50% chance of winning \$2,000
- A 50% chance of winning \$10,000
- A 50% chance of winning \$100,000

5. You are on a TV game show and the chance of winning is 50%. Which would you prefer?

- \$1,000 in cash
- A 50% chance of winning \$2,000
- A 50% chance of winning \$10,000
- A 50% chance of winning \$100,000

6. You are on a TV game show and the chance of winning is 50%. Which would you prefer?

- \$1,000 in cash
- A 50% chance of winning \$2,000
- A 50% chance of winning \$10,000
- A 50% chance of winning \$100,000

7. You are on a TV game show and the chance of winning is 50%. Which would you prefer?

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10. You are on a TV game show and the chance of winning is 50%. Which would you prefer?

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Introduction

Strategic

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
Do It Yourself

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Please select a Team.


1. Team 1
2. Team 2

0%




Team 1

0%



Team 2




Quiz Results

15.5 Team 1
11 Team 2

| Score | <u>Risk Tolerance Level</u> |
|--------------|-------------------------------------|
| 6-8 | Low tolerance for risk |
| 9-12 | Below-average tolerance for risk |
| 13-15 | Average/moderate tolerance for risk |
| 16-19 | Above average tolerance for risk |
| 20-22 | High tolerance for risk |

RiskNa



Summary

What we discussed

- Define and measure risk preference
- Discuss implications for management

What is left to learn

- More understanding about preferences and tolerances
 - Read the curriculum
 - Read the chapter

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QUESTIONS?



39